

REMARKS

The Non-Final Office Action of April 24, 2003 has been carefully considered by the Applicants. In view of the above amendments and the following comments, reconsideration of the present application is respectfully requested.

Objection Concerning the Drawings

In the Office Action, the Examiner objected to the drawings because they allegedly failed to show the evidence as described in the specification. Specifically, the Examiner indicated:

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the evidence as described in the specification. Figure 3 is of such poor quality that the Examiner is unable to evaluate the data the Figure is cited as representing. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office Action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

In response thereto, Applicants have attached hereto color copies of the original photographs. Additionally, Applicants are submitting herewith a petition to the U.S. Patent and Trademark Office to accept the color photographs. Applicants respectfully submit that those color photographs more clearly show the features of the present invention. Consequently, Applicants respectfully request entering of the color photographs and withdrawal of this objection.

Rejections under 35 U.S.C. § 112, second paragraph

In the Office Action, second paragraph, the Examiner stated rejections under 35 U.S.C. § 112 with regard to the terms "plant," "monocotyledon," and "gene" in the claims. In response thereto, applicants have amended these terms in accordance with the Examiner's suggestions.

Additionally, Claim 1 has been amended to incorporate the final step of allowing the selected seed to produce a transformed monocotyledonous plant. Thus, this amended claim 1 is not an incomplete method claim. Please note that the term "plant" means a plant body and the seeds, as defined in the specification (page 7, lines 21-23).

With regard to the term "intact", please note that the definition of that term is defined on page 11, line 21 to page 12, line 3. As defined in the specification, a seed being "intact" means that the seed has not be subjected to any artificial manipulations, such as removal of the ovule or scarring of the blastodisk. In other words, the intact seed means a seed which has not been subjected to any artificial wounding manipulations. Thus, the naturally germinated seeds, as recited in claims 2 and 3, are still regarded as being an intact seed of the claimed invention of the present application, since they are not subjected to any artificial wounding manipulations.

Rejections under 35 U.S.C. § 112, first paragraph:

As of the priority date, those skilled in the art would easily understand that any monocotyledonous plant and any Agrobacterium could be used for the claimed invention. Furthermore, it would have been within the skill of those skilled in the art to modify and select specific culture conditions (e.g., composition of culture medium). This is evidenced through a review of the documents submitted with this Amendment as listed below:

1. Anne C.F.G. et al., *Plant Molecular Biology*, 7:43-50 (1986).
2. Bytebier B. et al., *Proc. Natl. Acad. Sci. USA*, 84:5345-5349 (1987).

3. Schafer W. et al., *Nature*, 327:529-532 (1987).
4. Sommer, S. et al., *Plant Molecular Biology*, 39:683-693 (1999).
5. Toki S., *Plant Mol. Biol. Rep.*, 15:16-21 (1997).
6. McCormac A.C. et al., *Euphytica*, 99:17-25 (1998).
7. Kang H.G. et al., *Plant Molecular Biology*, 38:1021-1029 (1998).
8. Uze M. et al., *Plant Science*, 130:87-95 (1997).
9. Park S.H. et al., *Plant Molecular Biology*, 32:1135-1148 (1996).
10. Sakamoto A. et al., *Plant Molecular Biology*, 38:1011-1019 (1998).
11. Daigen M. et al., *Hokuriku Sakumotsu-Gakkaiho*, 30:80-82 (1995) - partial English translation.
12. Yokoi S. et al., *Plant Cell Reports*, 16:363-367 (1997).

Monocotyledonous plants

In response to the Examiner's requirement to limit the scope of the claims to rice, it is well known in the art that various monocotyledonous plants could be transformed by the *Agrobacterium*-mediated techniques. The documents cited above also describe the transformation of wheat and maize. As indicated in the documents cited above, the spectrum of the host which could be infected and transformed by *Agrobacterium* is not limited to rice. Therefore, the Examiner's requirement to limit the scope of the claims to rice is believed to be unduly restrictive.

Agrobacterium

In addition to *Agrobacterium tumefaciens* used in the Example of the specification, any other *Agrobacterium* could be used for the transformation of the plants. For example, the document (4) above describes that *Agrobacterium rhizogenes* could be successfully used for the transformation (page 684, right column, line 23 to page 685, left column, line 26). Therefore, those skilled in the art as of the priority date could easily understand that *Agrobacterium* other than *Agrobacterium tumefaciens* could also be used for the claimed invention.

Materials, Protocols and Conditions

Materials, protocols, conditions and the like required for the Agrobacterium-mediated transformation were generally known in the art as of the priority date, as shown in document (5) above. Additionally, those skilled in the art as of the priority date could readily determine the type and/or concentration of the plant hormone, which is added to the medium of the transformation as evidenced in documents (6) through (10) above (see page 18, left column, line 29 to right column, line 2 of the document (6); page 1023, left column, lines 1-6 of the document (7); page 88, right column, Table 1 of document (8); page 1137, left column, lines 5-10 of document (9); and page 1012, left column, lines 25-32 of document (10)). Document (11) describes DKN medium which improves the efficiency of the transformation frequency of a rice variety Koshihikari, such medium can also be used for the claimed invention. As described in document (12), the conditions for the Agrobacterium-mediated transformation, other than those described in the specification (see page 364, Table 1), can also be used for the claimed invention. It should be noted that the pre-culture condition which can be used for the claimed invention is not limited to 4-5 days pre-culturing in auxin. According to the description of the present specification and common technical knowledge, those skilled in the art could alter the hormone to be added and the period for pre-culture. Other conditions, such as conditions for infection, selection, second selection, and regeneration, also should not be limited to those specifically described in the Example, since those conditions can also be altered according to the description of the present specification and common technical knowledge.

Selective Marker and Selection Steps

In the Office Action, the Examiner indicated that the selection step was an essential element. Therefore, applicants have amended claim 1 to incorporate the step of selecting the seed with the DNA of interest. However, the additional selective marker is not necessarily required for the claimed invention, since the trait conferred

by DNA of interest itself is also effectively used for the selection, especially in the case of lacking the additional selective marker. Selecting the seed based on the change in the traits which is conferred by the marker gene and/or DNA of interest could be easily performed by those skilled in the art without undue experimentation.

Rejections Under 35 U.S.C. § 102

One of the important features of the claimed invention is infecting the intact seed with *Agrobacterium*, wherein the intact seed has the meanings as defined in the specification at page 11, line 21 to page 12, line 3. None of the cited documents describe or suggest that such intact seed can be used for the transformation with *Agrobacterium*. Specifically, Goldman et al. uses a wounded seed for the infection. Grimsley et al. describes that inoculating a bacterial suspension with a syringe performs the infection of *Agrobacterium*. As a result, the seed is wounded by the needle of the syringe. Mahalakshimi et al. describes that "whole seeds of wheat were gently scraped with No. 1 sandpaper, exposing the embryo, and incubated in the bacterial solution". "Exposing the embryo" means the removal of at least pericarp and seed coat which overlay the embryo. Furthermore, it is naturally predicted that scraping with sandpaper makes a wound also on the embryo itself. Therefore, none of the cited documents teach or suggest the important feature of the claimed invention.

CONCLUSION

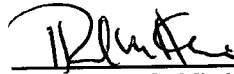
Applicants respectfully submit that in view of the above amendments and remarks, the present application is in condition for allowance. Withdrawal of the rejection and issuance of a Notice of Allowance is respectfully requested.

It is believed that no fee is due in the filing of this Amendment. Examiner is authorized to charge any fees due or credit any overpayments to Deposit Account No. 06-0308.

Respectfully submitted,

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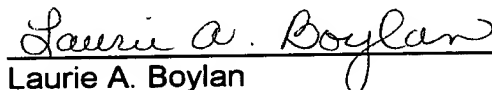
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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 25, 2003.



Laurie A. Boylan